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STATE AID TO PRIVATE OWNERS AND LOCAL POLITICAL UNITS

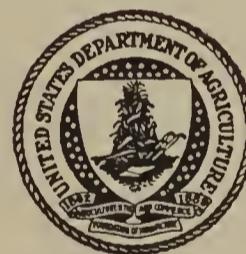
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FROM

“A NATIONAL PLAN FOR AMERICAN FORESTRY”

A Report Prepared by the Forest Service, U.S. Department of Agriculture
in Response to S. Res. 175 (72d Congress)

SENATE DOCUMENT No. 12 – SEPARATE No. 24



UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1933

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STATE AID TO PRIVATE OWNERS AND LOCAL POLITICAL UNITS

By H. J. EBERLY, District Forest Inspector

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SCOPE AND FUNCTIONS OF STATE AID

Ownership of the 495 million acres of commercial forest land in the United States is divided as follows:

	Percent
Federal-----	18
State, county, and municipal-----	2
Private-----	80

Since 80 percent of our total commercial forest area is in private ownership, embodying a vast amount of public interest and welfare, it is readily apparent that public participation to aid and stimulate private action in forestry is desirable and offers great possibilities of getting something done on an immense forest area. For example, of the total area of privately owned commercial forest lands in need of protection from fire, only a little better than half is at present being protected.

The Federal Government offers forestry aid in fire protection, planting, and extension work to private owners through the States under the provisions of the Clarke-McNary law. Likewise the several forested States extend aid to private forest owners, and this discussion is for the purpose of evaluating the amount of such aid and of presenting factual information on the character of such activities.

All the States, except Arizona, Missouri, and South Dakota, now provide many or all of their private forest landowners with some form of forestry aid. Some States are doing much, others comparatively little, but the basic need and justification of extending aid to private forest owners are given at least formal acknowledgment by all forested States. In some instances aid in forestry is extended by counties, towns, and municipalities as well as directly by the State, and in this report all such aid is included as "State aid."

The character of State aid to private owners is along one or more of the following well defined lines of forestry activity: Protection from forest fires, planting and nursery work, forestry extension, tree disease control, forest insect control, legislation, research, economic and forest surveys.

It is to be understood that these services, or the part considered here, are those which are performed or financed directly by State (or local) governments and which extend outside the boundaries of publicly owned lands and accrue to the benefit of the private owner.

State forestry aid, according to its character, may be of direct or indirect assistance to the private owner. Thus, in fire protection, owners receive direct aid through State forces or State funds which

help them to bear the cost of protecting their holdings, while the results of research aid indirectly by providing information that may or may not be applied by the individual owner in the improvement of forest practice and returns.

An effort has been made to ascertain the amount of State, county, and town funds annually spent for forestry work which aids forest owners, and the results are shown by regions in tables 1 and 2. On account of the great difficulties encountered in obtaining these data, absolute exactness is not claimed. The most that can be said for the tables is that they represent the most comprehensive survey yet made in this field. Wide variations in the character and organization of the many State forestry projects, added to the complexities of evaluating indirect aid, all contribute to the difficulties of expressing definitely the monetary value of all aid rendered. The findings must be interpreted under these limitations, which are explained more fully in the discussion of the various projects.

This discussion will deal first with the broader aspects of State aid being developed under the eight forestry activities of projects, with incidental consideration as to regions and States. Following this a more detailed analysis of activities within the regions will be presented.

TABLE 1.—*Amount of State, county, and town funds expended annually, and character of projects, of State aid in forestry extended to private owners, by regions*

Region	Fire protection ¹		Planting and nursery ²		Forestry extension ³		Tree disease control ⁴	
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent
New England-----	354,929	11.1	40,656	11.3	10,392	11.2	106,126	43.2
Middle Atlantic-----	863,743	27.0	180,512	50.1	17,757	19.2	94,707	38.5
Lake-----	1,246,361	38.9	10,633	3.0	16,287	17.6	9,404	3.8
Central-----	121,520	3.8	73,628	20.5	15,883	17.1	-----	-----
South-----	313,341	9.8	25,339	7.0	24,324	26.2	-----	-----
Pacific Coast-----	298,097	9.3	17,372	4.8	3,271	3.5	35,750	14.5
North Rocky Mountain-----	-----	-----	6,349	1.8	2,004	2.2	-----	-----
South Rocky Mountain-----	2,867	.1	5,467	1.5	2,800	3.0	-----	-----
United States-----	3,200,858	100.0	359,956	100.0	592,718	100.0	245,987	100.0

Region	Forest insect control ⁶		Forest research ⁷		Economic and forest surveys		All activities	
	Dollars	Percent	Dollars	Percent	Dollars	Percent	Dollars	Percent
New England-----	61,129,539	85.6	5,000	2.8	-----	-----	1,646,642	30.2
Middle Atlantic-----	8182,164	13.8	55,120	31.4	-----	-----	1,394,003	25.6
Lake-----	-----	-----	43,260	24.6	41,000	81.2	1,366,945	25.1
Central-----	-----	-----	12,000	6.8	-----	-----	223,031	4.1
South-----	-----	-----	15,913	9.1	-----	-----	378,917	7.0
Pacific Coast-----	87,734	.6	31,500	17.9	9,500	18.8	403,224	7.4
North Rocky Mountain-----	-----	-----	13,000	7.4	-----	-----	21,353	.4
South Rocky Mountain-----	-----	-----	-----	-----	-----	-----	11,134	.2
United States-----	1,319,437	100.0	175,793	100.0	50,500	100.0	5,445,249	100.0

¹ From Forest Service compilations, fiscal year 1932.

² From Forest Service compilations, calendar year 1931.

³ From compilations of the Forest Service, and other sources.

⁴ Information obtained from Bureau of Plant Industry, fiscal year 1932.

⁵ The States report an additional \$15,000 devoted to broad activity of forestry extension but not specifically so designated. More than this may actually be spent.

⁶ Information furnished by Plant Quarantine and Control Administration, fiscal year 1932.

⁷ Information obtained from various sources, fiscal year 1932.

⁸ Calendar year 1931.

TABLE 2.—*Annual distribution of State, county, and town funds among projects of State aid extended private owners, by regions*

Project	New Eng-land	Middle Atlan-tic	Lake States	Central States	South	Pacific coast	North Rocky Moun-tain	South Rocky Moun-tain	All regions
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Fire protection	21.6	62.0	91.2	54.5	82.7	73.9	25.8	58.8	
Planting and nursery	2.5	12.9	.8	33	6.7	4.3	49.1	6.6	
Forestry extension	.6	1.3	1.2	7.1	6.4	.8	25.1	1.7	
Tree disease control	6.4	6.8	.7			8.9			4.5
Gypsy moth and other forest insect control	68.6	13.1				1.9			24.3
Forest research	.3	3.9	3.1	5.4	4.2	7.8	60.9		3.2
Economic and forest surveys					3.0		2.4		.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

ANALYSIS OF STATE AID BY PROJECTS

Table 3 presents the present annual expenditures for State aid to private owners in the entire United States, according to the data available, as distributed among the several forestry activities.

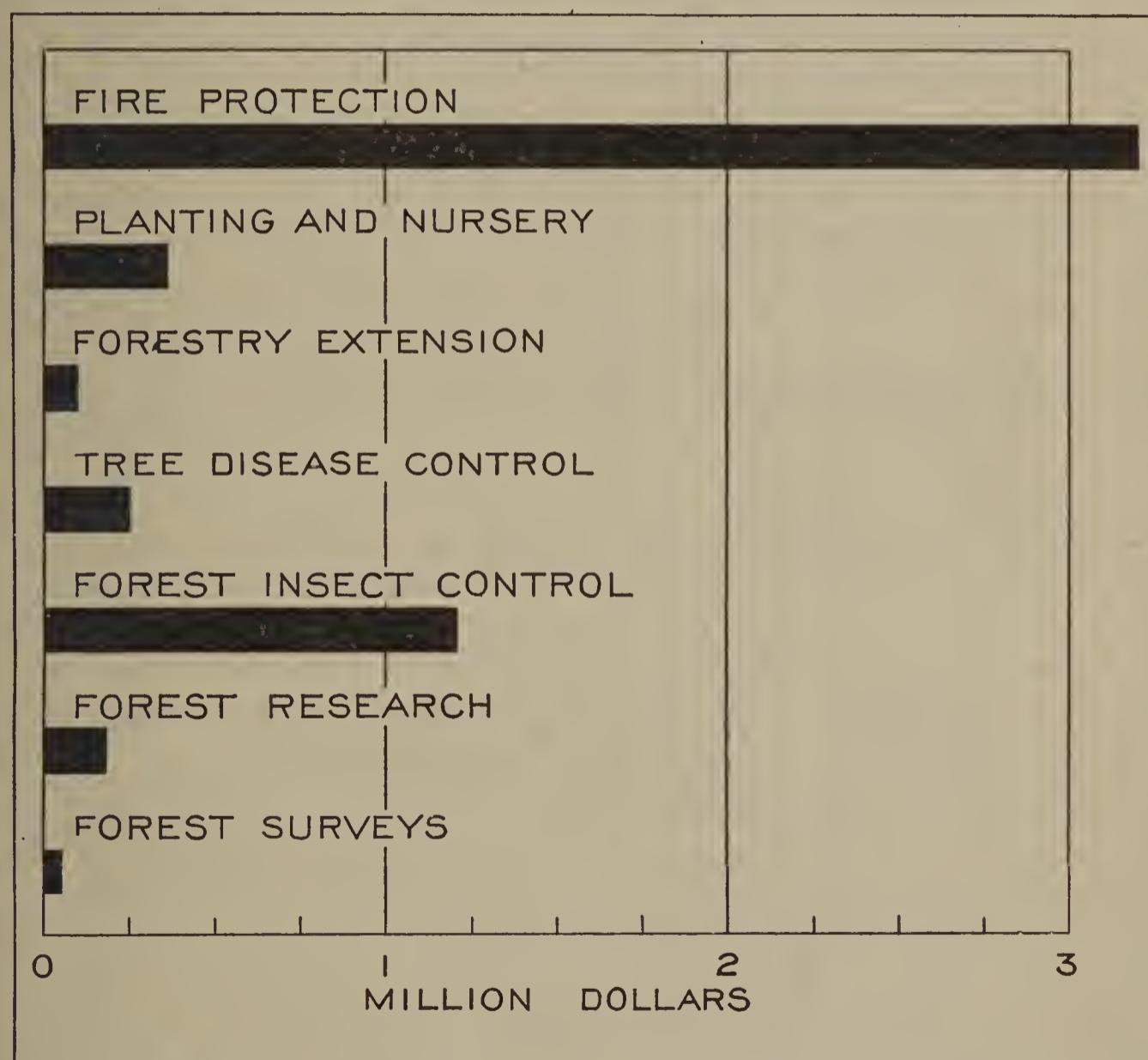


FIGURE 1.—Amount of State aid in forestry extended annually to private owners, by character of projects.

The following amounts are net State, county, and town expenditures for aid to private forest owners and do not include those of private owners or cooperative Federal allotments. Figure 1 graphically illustrates the amount of State aid in forestry extended annually to private owners by character of the forestry projects.

TABLE 3.—*Annual State aid in forestry to private owners, by projects*

Project	Amount supplied	
	Dollars	Percent
Fire protection	3,200,858	58.8
Planting and nursery work	359,956	6.6
Forestry extension	92,718	1.7
Tree-disease control	245,987	4.5
Forest-insect control	1,319,437	24.3
Forest research	175,793	3.2
Economic and forest surveys	50,500	.9
Total	5,445,249	100.0

FIRE PROTECTION

The greatest amount of State aid in forestry being provided private owners in the entire Nation is for forest fire protection. This amounts to over \$3,000,000 annually and constitutes approximately 60 percent of the total.

Fire protection embraces the employment, organization, and supervision of all personnel engaged in preventing, discovering, and suppressing forest fires. It likewise provides for all publicity and educational efforts and the equipment used for teaching the public the need and importance of forest-fire prevention. To fire protection is charged the cost of lookout towers, telephones and telephone lines, roads and trails, horses, vehicles and motor equipment, and the employment of personnel and purchase of any equipment and supplies necessary to the detection, reporting, and suppression of forest fires.

It does not necessarily follow that, simply because a State provides funds for fire protection, all timber owners within that State receive direct benefit from such aid. Where fire protection is established on a State-wide basis, all private owners do receive direct aid from State funds so spent.

In many States limited funds prevent organized protection on a large part of the private lands needing fire protection, and in such cases direct State aid reaches only those owners within the protected districts. Nevertheless, outside owners receive indirect aid through the broad forestry educational programs and demonstrations of protection, management, and the like, conducted by the central State forestry organization. All States having important private forest holdings except Arkansas, Idaho, and Montana, now extend aid in fire protection to all or groups of private owners. Arkansas has no organized State forestry department. Although State funds for fire protection are made available in Idaho and Montana, these are spent for the protection of State-owned rather than privately owned forest lands. Except in Illinois, which provides fire protection funds independently, all State organized protection activities are on a cooperative basis with the Federal Government under provisions of section 2 of the Clarke-McNary law.

The Lake region, embracing Michigan, Minnesota, North Dakota, and Wisconsin, ranks first in the Nation in the amount of State funds provided for fire protection and suppression. The Middle Atlantic region ranks second and New England third.

The Lake, New England, and Middle Atlantic regions also rank high in the proportional amount of State aid extended in the fire-protection project. In this respect they differ materially from the Western States, whose laws require the owner to make the principal provisions for the protection of his lands from fire.

FOREST PLANTING AND NURSERY WORK

Planting and nursery work pertains to the establishment of forest-tree nurseries, the collection and purchase of seed, the growing of forest seedlings, and the distribution of forest planting stock by the States to the private forest landowner. The distribution is now primarily for the benefit of the farmer owner, and in most States the planting stock is furnished by the States at cost of production. In this discussion the planting by the States of their own forest lands is not included.

Of the total State aid extended all private owners in forestry, 6.6 percent is for some form of planting and nursery work. Thirty-eight States are providing aid of this general description with a present annual State contribution of approximately \$360,000. The extent and character of the aid rendered varies according to local problems. All are cooperating with the Federal Government under section 4 of the Clarke-McNary law in providing aid in the procurement, production, and distribution of forest-tree seeds and plants for the purpose of establishing windbreaks, shelter belts, and farm woodland. Approximately one half of the total financial aid in planting benefits the farmer. Commercial planting of cut-over lands by private owners and the planting of State forest areas are also directly or indirectly aided—directly by the production of cheap nursery stock and indirectly by advice as to planting methods.

From a national viewpoint the Middle Atlantic region ranks first in the amount of aid extended by States to private owners in planting, with the Central States second and New England third.

While State funds spent for planting and nursery work are in part returned to the States through the sale of planting stock to private owners, the planting expenditures herein reported are exclusive of sales receipts.

FORESTRY EXTENSION

Forestry extension includes all public efforts through information, advice, and demonstrations to promote among private forest owners, particularly farm owners of woodlands, the proper care and use of their forest-growing lands.

In most States forestry extension aid to farm timberland owners is provided in cooperation with the Federal Government under the provisions of section 5 of the Clarke-McNary law. In addition to the 31 States cooperating on this basis with their farmers, Maine independently provides direct extension aid to farmers, and Florida does likewise for naval stores operators. State aid in forestry extension to private owners as shown in tables 1 and 2 includes only those expenditures made on projects organized and conducted primarily for such work. On this basis, present annual expenditures for extension activities constitute 1.7 percent of total State-aid expenditures, a low rating. No attempt has been made to evaluate allocated part-time

activities of State forestry employees performing principally other duties.

Extension work, which comprises demonstrations of desirable forest management practices and the furnishing of advice as to thinnings, management, and care of private timber-growing projects, is a form of indirect State aid. During the fiscal year 1931 Wisconsin ranked first among the States with an expenditure of \$9,199 for forestry extension work, Pennsylvania second with \$8,657, and Georgia third with \$6,080.

TREE DISEASE CONTROL

During the fiscal year 1932 the States made \$245,987 available for forest-tree disease control for the aid of private owners. The work financed by States was confined to the New England, Middle Atlantic, Lake, and Pacific coast regions and was specifically for pine-blister-rust control. This rust affects only five-needle pines, so that control work is not needed outside the regions where these species grow. Control consists in the eradication of gooseberry and black-currant bushes, the intermediate host of the rust fungus.

Of the total amount made available the States appropriated and allotted \$196,282 and towns \$49,705. In the north Rocky Mountain region (Idaho and Montana) \$30,000 of State money was made available but this amount is not included in the total as an aid to private owners because it was spent on State rather than privately owned lands. The annual State tree-disease control expenditures in behalf of private owners amounts to 4.5 percent of all State aid expenditures for forestry in the United States.

GIPSY MOTH AND OTHER INSECT CONTROL

Forest insect control embraces all efforts by spraying, dusting, the breeding and release of parasites, or otherwise, to combat forest insect pests. Direct State aid in insect control at present is centered on the control of the gipsy moth, a tree-defoliating insect which has caused great loss in the northeastern region of the United States.

Large sums have been made available by States in the New England region and by New Jersey and New York for the control of this destroyer. The Federal Plant Quarantine and Control Administration reports the expenditure during the fiscal year 1932 by six States and during the calendar year 1931 by two States of \$1,311,703 from State, county, and town funds.

Control barriers are established within forest areas to prevent spread of the defoliating insects, but a very considerable portion of the funds is devoted to spraying and dusting along roadsides and some for work on shade trees. Since all types of work combine to aid in preventing spread of the disease to commercial forest areas, the entire expenditure as reported has been included in tables 1 and 2 as State aid to private forest owners.

Only one other forest insect control project in 1931 is part of the present record. In Washington the State, county, and private forest interests combined to finance a \$15,000 project which is described in the latter part of this section. This makes the imposing total for the Nation of \$1,319,437 spent for forest insect control work by the States as an aid to private owners, or 24.3 percent of all State aid expenditures

for forestry in the United States. The northeastern group contributed practically all of this, as follows:

	Percent
New England	85.6
Middle Atlantic	13.8
Pacific coast	.6
Total	100.0

Other forms of forest insect control work are being conducted in the Western States, but there the funds are raised by the private owners under State legislation, and no direct State moneys are provided.

LEGISLATION

Legislation, as here considered, has reference to State enactments redounding to the advantage of forestry and forest ownership. Features of certain forest or forest land taxation laws may properly be considered as an important form of State aid to private owners. Forest taxation will be discussed here and in part II only briefly, because the whole subject will be covered in the forthcoming taxation inquiry report.

Twenty States have enacted legislation granting tax relief to forest lands regardless of the origin or area of the stand. Louisiana, Wisconsin, and Oregon have the greatest acreage listed under such legislation. Fourteen States have laws granting tax relief to planted stands, to limited areas, or to properties leased or deeded to the State. It is deemed impracticable to evaluate financially this form of State aid, and therefore no monetary aid is shown under this head.

RESEARCH

Research includes scientific studies, wherever performed, the cost of all or part of which is defrayed by the State, to determine the life history of trees, factors and conditions affecting their establishment, growth, utilization, etc.

State funds allocated to forest research projects are generally productive of indirect aid to private forest owners, the value of the results depending entirely on individual use of them. Information as to State funds spent for forest research is incomplete, but the amount ascertainable was in the neighborhood of \$175,793 during the fiscal year 1932, or 3.3 percent of all State funds expended for forestry as a means of private aid.

Few States conduct extensive forest research projects of their own, although many devote attention to local forest problems incidental to other forestry work. These minor research contributions are mostly in the form of allocated time, and no attempt has been made to have them evaluated. States which are outstanding in conducting specific forest research projects are Pennsylvania, New Jersey, New York, Minnesota, and Georgia. Several States contribute funds to outside agencies, as in California, where the State allots funds for research to the Federal Forest Experiment Station. Several other States including Idaho, Indiana, Michigan, and California are expressing their interest in research by making funds available for such work in their educational institutions of higher learning.

Several forest schools at other State institutions conduct research projects and contribute materially to forestry knowledge, but data are lacking as to the exact amount of such work and the portion which constitutes a form of State aid to private owners.

FOREST AND ECONOMIC SURVEYS

In order to plan an adequate forestry program intelligently it is of greatest importance that a State know the character and extent of its forest lands and resources. Some States are taking steps to inventory their forest lands and resources. The Federal Government is engaged in a project of this kind which contemplates a survey covering all forested States in the Nation. The Lake States of Michigan, Minnesota, and Wisconsin have undertaken land economic surveys of their own to find out the present character and use of wild lands and to aid in determining the best use of such areas for permanent development. This economic inventory is still under way in Michigan and Wisconsin but has been temporarily discontinued in Minnesota. Of the total amount spent, \$41,000 is estimated here as the 1932 fiscal year expenditure by the State on forest land surveys in aid of private owners. These economic surveys are of principal value and are of direct aid to the States themselves in formulating public policies and programs. The aid of these surveys to private owners is of very indirect nature and it is therefore difficult to set a true valuation of such aid to them.

In California the State in 1932 contributed approximately \$9,500 for a forest-cover map, and this amount is included as a State-contributed aid to private forest owners. Both Oregon and Washington have allotted small amounts to the Federal forest survey, primarily for the preparation of forest-cover maps. The total amount of money listed under the present heading is \$50,500, which represents the Lake States and California items. Several other States, in the past and in various manners, have conducted surveys or inventories of their forest resources, but the work has seldom been complete. There is a distinct need for more work of this nature.

SUMMARY

The following recapitulation shows the regional distribution of annual expenditures for State aid:

	Percent		Percent
New England-----	30. 2	Pacific Coast-----	7. 4
Middle Atlantic-----	25. 6	North Rocky Mountains-----	. 4
Lake-----	25. 1	South Rocky Mountains-----	. 2
Central-----	4. 1		
South-----	7. 0	Total-----	100. 0

Figure 2 shows by regions and figure 3 by States, the total amount of State aid in forestry extended annually to private owners for all projects. To give some idea of the size of areas needing aid in each region, this amount is contrasted with the area of privately owned forest lands in need of protection from fire. Since certain States materially promote accomplishments in fire protection through legislation affecting private owners, this graph includes also the amounts expended by all private forest owners for fire protection. The amount

of acreage as shown in need of protection from all types of damage is not in itself a true and complete index of the amount of State aid which it would be proper for the regions to provide. The costs per acre of forestry work, particularly fire protection, varies very ma-

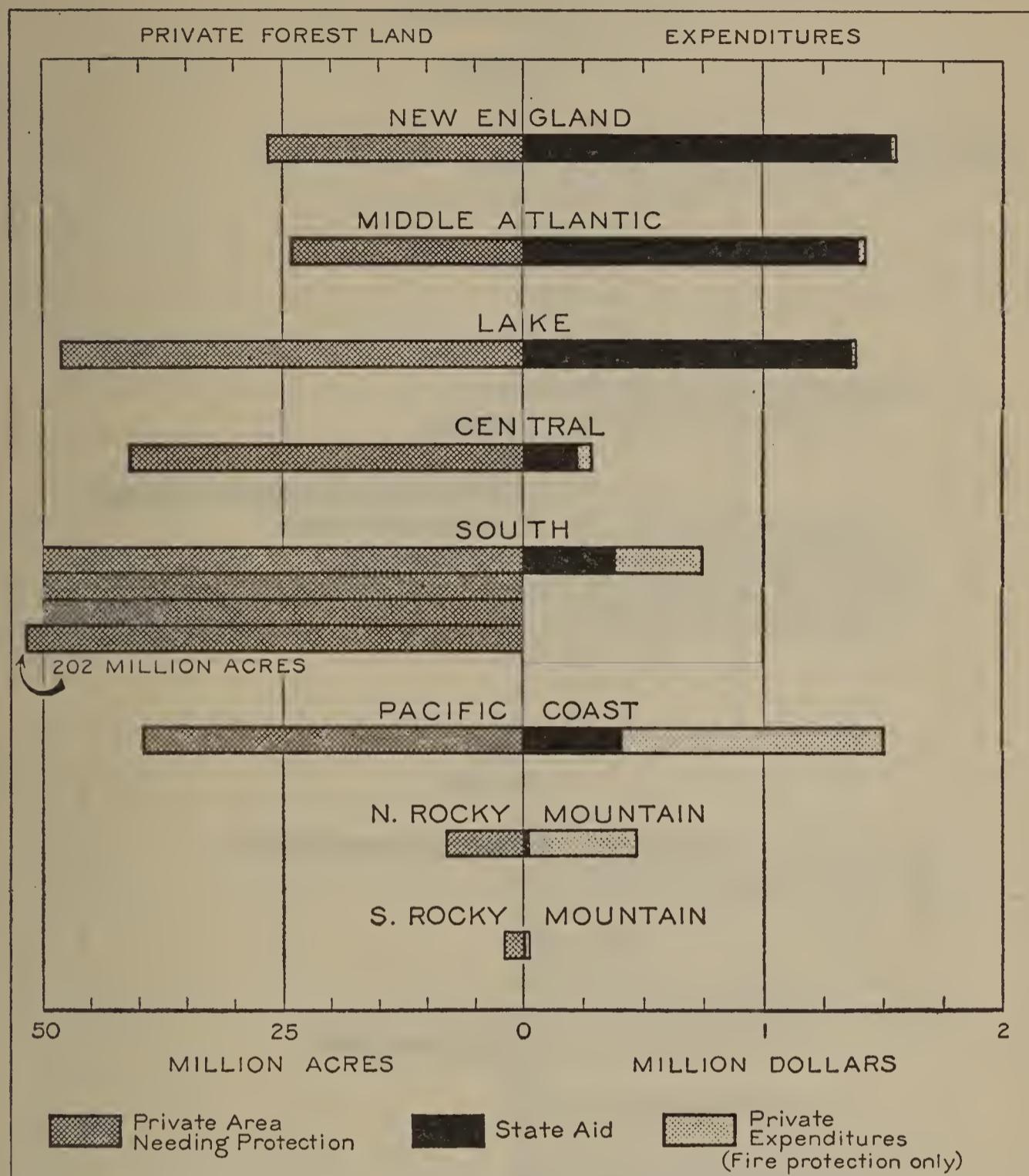


FIGURE 2.—Regional summary of State aid in forestry extended annually to private owners for all characters of projects, and private expenditures reported by States for fire protection, compared with privately owned area needing fire protection.

terially between the different regions, and cost rather than acreage is the true standard of comparison.

ANALYSIS OF STATE AID BY REGIONS

NEW ENGLAND REGION

The New England region comprises the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, and Rhode Island. The total State aid, including county and town expenditures, in this region is listed in table 4.

State aid extended owners in this region amounts to 30.2 percent of all State aid extended in the United States and ranks first among regional expenditures.

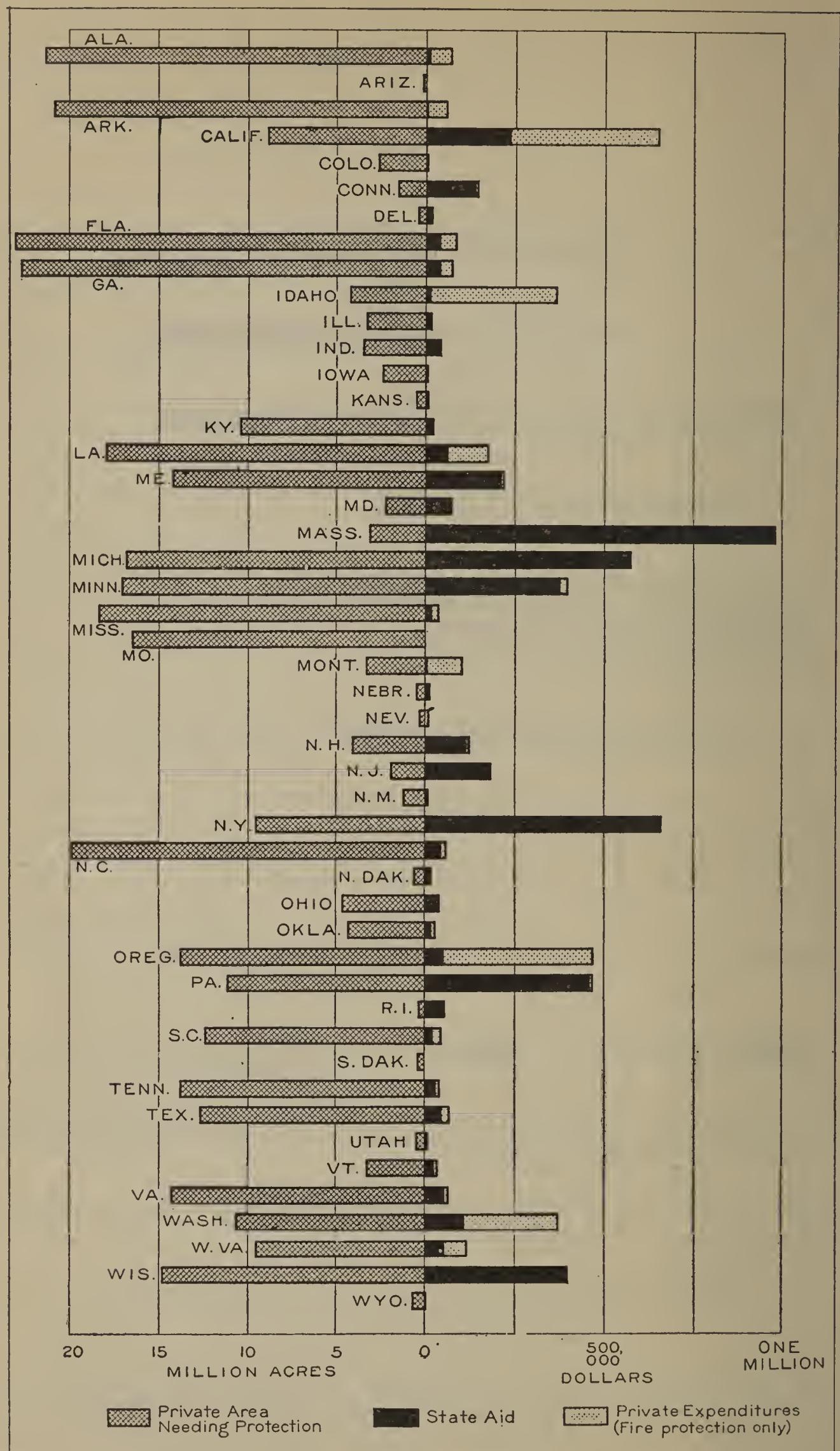


FIGURE 3.—Amount of State aid in forestry extended annually to private owners for all characters of projects, and private expenditures reported by States for fire protection, compared with privately owned commercial forest area.

Fire protection.—State, county, and town aid provided in the fiscal year 1932 for fire protection amounted to \$354,929 in the six New England States. The protection afforded is State-wide, and all private forest owners receive direct public aid from either State, county, or town funds. In Maine a special fund for fire protection on part of the area is raised by a levy of $2\frac{1}{4}$ mills on the valuation of all property, while on the remainder of the area towns pay suppression costs and the State and Federal Governments carry the costs of prevention. In Massachusetts and Vermont the entire costs of suppression, and in New Hampshire and Rhode Island half of these costs, are town obligations. In Connecticut half the suppression costs are paid by the counties. In Connecticut there is a small association of private owners, but the general practice in this region is to protect private timberlands at public expense.

TABLE 4.—*Annual State aid to private owners in New England, by projects*

Project	Distribution of regional aid		Project	Distribution of regional aid	
	\$	Percent		\$	Percent
Fire protection.....	\$354,929	21.6	Gipsy-moth control.....	\$1,129,539	68.6
Planting and nursery work.....	40,656	2.5	Forest research.....	5,000	.3
Forest extension.....	10,392	.6	Total.....	1,646,642	100.0
Tree-disease control.....	106,126	6.4			

Planting.—All the New England States except Rhode Island own and operate tree nurseries, and all extend aid to farmers in planting. Rhode Island solicits planting orders from owners and purchases seedlings in wholesale quantities from commercial nurserymen. Massachusetts ranks first in this region in the number of forest trees distributed to farmers which in 1931 amounted to more than half a million. Some $2\frac{1}{2}$ million more are planted annually in the State, with about 2 million going on State forests and 600,000 on water companies' lands and other large private holdings. Planting on the State forests and on water company holdings are reported as nearing completion.

Extension.—Connecticut, Massachusetts, New Hampshire, and Vermont all extend State aid to owners of farm woods and are cooperating with the Federal Government under section 5 of the Clarke-McNary law. New Hampshire and Connecticut are especially active in this extension aid. Maine employs its own extension forester, who performs both extension and educational work.

Blister-rust control.—The States in this group provide more money for the control of white pine blister rust than for either planting, extension, or research activities. New Hampshire leads all other States in the amount provided for this tree disease control work, expending in the fiscal year 1932, \$55,000.

Gipsy-moth control.—Still larger sums are made available for gipsy-moth control. During the fiscal year 1932 the six States of New England, together with their counties and towns, contributed \$1,129,539 to suppress this insect. In Massachusetts alone the sum of \$803,048 was provided. State, county, and town aid for the work comprises 68.6 percent of the regional expenditures for all forms of forestry aid to private owners.

Research.—A sum of approximately \$5,000 is provided by this group of States for aid in forest research. Massachusetts performs research work on the Swan State Forest. Forestry departments and educational institutions of the other States are engaged in a limited amount of silvical research. Entomological research work is worthy of note in Maine and Connecticut. There is a growing demand in this region for Federal aid through research on the economic phases of forestry.

MIDDLE ATLANTIC REGION

The States in this group comprise New York, New Jersey, Pennsylvania, Delaware, and Maryland.

Annual expenditures for State aid to private owners is segregated, by projects, in table 5.

Expenditures for State aid in this group constitute 26.1 percent of those made in the entire Nation and are only exceeded by those in the New England region.

Fire protection.—State aid in fire protection amounted to \$863,743 during the fiscal year 1932, and giving this group second rank in the Nation in such aid averaged over the past 5 years. By far the greater proportion of the whole expenditure is for aid to private owners, although State forests as well as private holdings are protected. Pennsylvania and New York provide the greatest amount for State aid in fire protection, the former contributing \$371,996 and the latter \$281,743 during the fiscal year 1932. The greatest amount spent in any one year during the past 5 years by any one State in this group of five was \$574,361 by Pennsylvania during the calendar year 1930. Since with minor exceptions fire protection is conducted on a State-wide basis, practically all forest owners receive this aid. Furthermore, practically all costs of protection are borne by public rather than private agencies. In Maryland one half the costs of fire suppression are paid by the counties.

TABLE 5.—*Annual State aid to private owners in Middle Atlantic region, by projects*

Project	Distribution of regional aid		Project	Distribution of regional aid	
	\$	Percent		\$	Percent
Fire protection.....	\$863,743	62.0	Gipsy-moth control.....	\$182,164	13.1
Planting and nursery work.....	180,512	12.9	Forest research.....	55,120	3.9
Forest extension.....	17,757	1.3	Total.....	1,394,003	100.0
Tree-disease control.....	94,707	6.8			

Planting.—The Middle Atlantic States far exceed any other group in State aid extended in forest planting and nursery activities. During the calendar year 1931 they provided \$180,512 for aid in private planting projects. Of the total amount of State planting aid extended by all States to private owners, this group contributes more than half. In 1931 New York in aiding private planting projects alone spent \$113,136 of State funds, amounting to more than 30 percent of the total of State planting aid in the entire Nation. Large additional amounts were spent by Pennsylvania and New York for planting on State-owned forest areas.

Extension.—Slightly more than 1 percent of the total State aid in this region is in the form of forestry-extension work. All the States,

except Delaware, employ extension workers and are furnishing State aid of this nature in cooperation with the Federal Government under provisions of the Clarke-McNary law. Pennsylvania led in 1931 with an expenditure of \$8,657 and New York ranked second with \$5,020. New York, in addition to the extension forester's activities, furnished extension service to private owners through aid of members of Cornell, Syracuse, and St. Lawrence Universities. The limited amount of forestry-extension work needed in Delaware does not warrant the employment of a man solely for this duty, but incidental work in extension is performed.

In New Jersey the extension forester aids owners of small timber tracts by making general surveys of the properties, marking small sample areas for selective cutting, and furnishing information in marketing forest products. For projects that require only a few days of field work the aid is furnished free to owners. For partial estimates on larger tracts the State charges owners for the forester's field expenses.

In Pennsylvania the Department of Forests and Waters gives free advice to private owners, and particularly to water and mining companies, on forest management, but the extension work among farmers is not stressed, owing probably to the strong farm-forestry extension activities of the Pennsylvania State College of Forestry.

Maryland tenders forestry-extension service to private owners through the aid of both the extension forester and members of the State Department of Forestry. Information is given on timber estimating, sample marking, preparation of sale contracts, and prospective buyers. The foresters charge the owners \$3 per day plus expenses up to 3 days' service, and thereafter at rate of \$8 per day. In 1929 examinations were made and plans formulated for 50 forest properties comprising 13,500 acres of woodland located in 18 different counties.

Blister-rust control.—During the fiscal year 1932 New Jersey, New York, and Pennsylvania spent \$94,707 of State money for white pine blister-rust control. This amount, while it comprises only 6.8 percent of the total amount of State forestry aid in the Middle Atlantic group, was 38.5 percent of all State aid in the Nation for its specific purpose. New York contributed most of the funds, putting up \$75,000. Delaware does not contain white pine, and the limited areas of such species in Maryland do not apparently necessitate control work.

Gipsy-moth control.—State aid for gipsy-moth control was made available by New Jersey and New York during the calendar year 1931 in the amount of \$182,164. This amount comprises 13 percent of the State aid of all forms rendered by all five States to private owners.

Research.—In these States some technical employees of the forestry organizations devote a portion of their time to research, but only in New Jersey, New York, and Pennsylvania is this activity provided for in definite form. Expenditures for research by all three States during the fiscal year 1932 are estimated at \$55,120, or 4 percent of all State forestry-aid expenditures in the entire group. In Pennsylvania the Department of Forests and Waters maintains a Forest Research Institute at Mont Alto and allot annually approximately \$21,120 for research activities. In New Jersey consid-

erable research has been done along the lines of growth studies and the preparation of volume tables. New York contributes more toward forest research than any of the other States in the group. The New York State forestry department is active in research, and in addition the State budget provides aid in research through funds allotted the State forest schools at Syracuse and Cornell. New York's State aid in research amounts annually to approximately \$31,000.

Of the total amount of State aid provided in the Nation for forest research, 31.4 percent comes from the Middle Atlantic group of States.

LAKE STATES REGION

The States in this group comprise Michigan, Minnesota, North Dakota, and Wisconsin. Annual expenditures of State aid to private owners is segregated by projects in table 6.

Fire protection.—State aid in expenditures for fire protection in this group of States is outstanding in that the amount exceeds that in any other group and constitutes 38.9 percent of the total State fire-protection expenditures in all groups. During the 5-year period 1927-31, Michigan, Minnesota, and Wisconsin together made an average annual expenditure of \$941,804 for fire protection. Michigan leads in the amount of these State expenditures, having spent during the fiscal year 1932, \$523,799 with Minnesota and Wisconsin each spending approximately \$370,000. The greatest amount of State aid provided by any one State in any single year during the past 5-year period was by Michigan in 1930, in the amount of \$708,086.

These three States own State forests, parks, public domain, and tax-delinquent forest lands amounting to several million acres, and in the protection expenditures allowance must be made for fire protection on these as well as on privately owned forest properties. From 1924 to the end of the fiscal year 1932 Federal, State, and private expenditures for fire protection in the three States have aggregated \$8,439,202, segregated as follows:

	Amount	Percent
State funds	\$6,881,666	82
Private funds	118,390	1
Federal funds	1,439,146	17
Total	8,439,202	100

The States themselves are taking leadership in fire-control work. Private owners do not contribute funds for forest-fire protection in Michigan and Wisconsin. In Minnesota, where the present private contribution is but 5 percent of the total, financial cooperation from owners is becoming less each year as the commercial forests are harvested. Steady advancement has been made in State participation by all three States, and increases in the States' budgets for fire control have been made from year to year.

All forest land within the protection districts in Michigan, Minnesota, and Wisconsin is now being more or less thoroughly protected. It amounts to 55,811,030 acres in the aggregate and is 100 percent of the forest area now estimated as in need of being protected. Hence

all private owners may be said to receive direct aid in this respect. More or less pressure is being brought to bear upon all three States to extend the protection districts to include regions to the south and also to give more intensive protection to certain areas within the existing districts.

Planting.—Planting and nursery work is maintained in Wisconsin with the State conservation department; in Michigan, with the State college; and in North Dakota, with the State forester. Because of legislative limitations, no such cooperative planting work is conducted in Minnesota. Eventually Minnesota may be led to take advantage of Federal cooperation by the increasing demand of farmers for forest planting stock. The State has recently established a nursery and during 1932 expects to plant a million trees on State-owned lands largely by contributed time of employees within its forestry organization.

TABLE 6.—*Annual State aid to private owners in the Lake States, by projects*

Project	Distribution of regional aid		Project	Distribution of regional aid	
	\$	Percent		\$	Percent
Fire protection-----	\$1,246,361	91.2	Forest research-----	\$43,260	3.1
Planting and nursery work-----	10,633	.8	Economic surveys-----	41,000	3.0
Forestry extension-----	16,287	1.2	Total-----	1,366,945	100.0
Tree-disease control-----	9,404	.7			

During the calendar year 1931 the States of Michigan, Wisconsin, and North Dakota made \$13,824 of State funds available for planting work. Of this amount approximately \$10,633 benefited private forest land owners in their planting enterprises. This extended expenditure is 3 percent of planting aid extended by all States, but it constitutes only 0.8 percent of the expenditure for all financial aid in forestry within the Lake group.

From 1926 to 1931 Wisconsin, Michigan, and North Dakota have produced and distributed 18,129,189 trees to private owners, about half going to farmers and half to larger holdings.

In Michigan two agencies are engaged in forest tree nursery work with a total annual production and distribution of nearly 24 million trees for planting on State and private lands. The conservation department produces stock primarily for planting on State-owned lands and the State college for distribution to the farmers and other private owners. The year 1931 probably represents a peak in the public planting operations. The conservation department produced in that year more than 22 million trees, of which over 21 million were planted on State land. The total production and distribution of planting stock in Michigan was exceeded in 1931 by only one other State, namely, New York.

The Michigan State College, cooperating with the Federal Government under the Clarke-McNary law, distributed in 1931 nearly 1½ million seedlings and transplants to private owners and produced 7,140 trees for planting on State lands. The total distribution of trees to farmers in Michigan increased from 268,376 in 1925 to 1,726,-926 in 1931. In 1931, 158 farm windbreaks were established.

In 1931 the Wisconsin forestry program received greatly increased financial support. Increased planting programs on State forest lands are planned. Moreover private lumber, pulp, and paper companies in Wisconsin are becoming more interested in planting. One company in 1931 planted 1,896 acres. Some companies are developing nurseries of their own.

An urgent planting need exists in the Lake States, both on privately owned and on State and county lands. The development of State and county forests and the reforestation of lands being entered under the forest crop laws, especially in Michigan and Wisconsin, will necessitate planting on an immense scale.

Extension.—All four States employ extension foresters in cooperation with the Federal Government. During the fiscal year 1931 they expended \$16,287 on cooperative extension projects of aid to private forest owners, especially to farmers for the furtherance of better forestry practice. This extension work has resulted in an increase in farm forest planting. Windbreaks and shelter belts have been established, woodlands improved, and boys and girls encouraged in forestry through 4-H Club work. The forestry department of the University of Michigan, Michigan State College, and the University of Minnesota also furnish free information and technical advice to owners in regard to the proper management of forest lands. This includes not only correspondence and interviews but often the examination of areas and, in some cases, the preparation of management plans.

Blister-rust control.—During the fiscal year 1931 the Lake States made available for white pine blister-rust control \$9,404 which constitutes a direct aid to certain white-pine owners. Blister-rust control in Michigan, Minnesota, and Wisconsin is organized on a cooperative basis between the Federal Government through its Division of Blister Rust Control, the State agency, usually the department of conservation and/or the department of agriculture, and owners of white pines. Each owner of white pines desiring protection against blister rust furnishes the necessary labor to eradicate currant and gooseberry bushes under direction of a foreman furnished by the State. Private aid is thus extended by the State in a supervisory capacity and in the furnishing of advice and information on control methods.

Research.—Research in the general interest of forest owners is conducted by each of the three Lake States proper, but little along this line is reported from North Dakota. In Michigan the department of conservation maintains a forest-fire experiment station in cooperation with the Federal Forest Service, and both the State college and university forestry departments carry on investigations for the benefit of woodland owners and the advancement of forestry practice in general.

In Wisconsin the State university cooperates with the Federal Forest Service in the conduct of silvical investigations and in the maintenance of the Forest Products Laboratory.

In Minnesota the forestry department of the university conducts numerous investigations, both independently and in cooperation with the United States Forest Service. It also provides quarters for the Lake States Forest Experiment Station in St. Paul and, in addition, maintains an experimental forest and nursery of its own at Cloquet. The department of conservation formerly spent a considerable

amount on research, both independently and in cooperation with the Forest Service, but at present it has discontinued such aid. A rough estimate of expenditures for research in forestry by the Lake States follows:

Michigan:

Department of conservation-----	\$10, 000
State university-----	5, 000
State college-----	12, 760
	----- \$27, 760
Wisconsin: College of agriculture-----	3, 000
Minnesota: State university-----	10, 000
North Dakota: Allotted funds to Lake States experiment station-----	2, 500

Total-----	43, 260

Legislation.—Forest tax laws that may be considered a form of State aid to private owners have been passed by the three principal Lake States. The Minnesota law is inoperative, however, owing to county opposition. The Michigan law is being taken advantage of to only a moderate extent, while in Wisconsin, owing to a more liberal interpretation, the forest crop law is more popular. Land listed on January 1, 1932, under these laws as reported by the forest taxation inquiry is as follows:

	Acres
In Michigan-----	72, 701
In Wisconsin-----	278, 275
Total-----	350, 976

In 1932 a special committee in Wisconsin made a report to the Governor on Forest Land Use in Wisconsin, from which the following extracts are quoted:

THE SEVERANCE TAX (FOREST CROP LAW)

The Wisconsin forest crop law provides that forest-growing land be subject to a limited tax levy of 10 cents per acre, to which the State contributes a like acreage share and exempts the growing timber from current taxation but levies thereon at the time of cutting a severance or yield tax fixed at 10 percent of the "stumpage" value of the products cut and removed. The entry of land under this law is optional with the owner and subject to acceptance by the State at the discretion of the conservation commission. * * *

Value to State.—This study indicates a direct financial loss to the State from the operation of the forest crop law, even when it is strictly administered. It is in view of the situation disclosed by this report and the fact that in 1930 over 402,000 acres were entered under the law and that in 1931 applications were made for 430,000 acres of additional entry that the conservation commission revised its more liberal policy as to acceptance of applications for entry. * * * It is for the best interests of all concerned that land on which there is no present forest cover or natural reproduction should not be accepted. * * *

Value to local taxing district.—The towns are the direct and principal beneficiary of the forest crop law. They receive in lieu of the property tax that would be levied on the acreage entered 10 cents per acre from the State and 10 cents from the owner. * * *

Value to private owners.—The advantage of entry of lands by the private owner under the forest crop law is dependent upon successful forestry practice. Under a misconception of these advantages or merely in the hope of reducing the tax burden many thousands of acres of land have been entered under the forest crop law by private owners without any definite understanding of the management needed to produce a forest crop. While the State's loss on such land is merely a transfer from one public fund to another, with the compensating advantages already referred to, the owner, to justify his enterprise, must develop a timber crop whose ultimate harvesting will return to him more than his accumulated outlay. Therefore the present policy of the conservation commission in con-

cerning itself as to the return to the State is also a policy of protection to the private owner and may save him from entering into a loss transaction.

Although privately owned lands have been under the forest crop law to any considerable extent for barely three years, and although the conservation department is only now considering the removal of lands on which forestry is not being practiced, many owners are themselves discovering that natural reproduction will not take place rapidly enough or be of a character that will insure a merchantable crop worth the annual tax under the law and in consequence are either removing these lands from its provisions or are abandoning title by failing to pay the acreage share.

Wisconsin has definitely stimulated the creation of county forests. Of all the Lake States, Wisconsin is the only one in which county areas assume an important place in the State forestry scheme. Tax-delinquent land after the period of grace reverts to the counties. From the reverted lands, some 460,000 acres of county forests have been blocked out into forest units.

The Wisconsin forest cooperative law of 1927 was amended in 1929 to permit the counties to list county-owned land on the same terms as that privately owned. For every acre of land listed the State offers to pay 10 cents annually to the township in which the land lies. The county pays nothing. As a further encouragement, the 1931 legislature ordered the conservation department to pay the counties an additional 10 cents to be used in the development of the county forest units. Thus every acre of county forest draws 20 cents of State money each year, 10 cents going to the county and 10 to the township. The State in return is to receive 75 percent of the yield from the county forests. County forests have been established in eight counties and others are in the process of establishment.

In order to understand the alacrity in which the counties are creating forest units, as well as to appraise properly the possibilities of future accomplishments, it is necessary to look into the fiscal system obtaining. In Wisconsin real-estate taxes are collected by the townships, and the portion for county purposes is passed on to the county treasurers. Some of the county funds are then returned to the townships as county aid for schools and other services. A special law permits the townships to turn over the delinquent tax lists to the county in lieu of cash. Thus, from many heavily delinquent townships the county receives no cash or may even be in debt to the township. In one county in 1931, although the county levy was \$140,000, after \$40,000 was returned to the townships for school districts, there was but \$1,500 cash for county purposes. The balance was in the form of delinquent tax lists. The banks have refused further loans, and the county confronts an emergency.

Although county forests exist only in Wisconsin, the counties may become a more important factor in the Minnesota situation. There the title to tax-delinquent land passes to the State after 5 years, but the State holds the land as trustee for the various taxing units in proportion to the unpaid taxes. The State's equity in these taxes is usually less than 10 percent. There is considerable disposition among local county and town officials to maintain that under these circumstances the county, rather than the State, should have the determining voice in regard to what is done with the land. It yet remains to be seen what kind of division of responsibilities will be satisfactorily worked out in Minnesota.

Economic surveys.—Minnesota, Michigan, and Wisconsin have each been engaged lately in economic surveys to determine the

character and extent of forest and other lands. Such inventories are very desirable and should prove a valuable basis for planning land-use programs. It is estimated that these States during the fiscal year 1932 spent a total of \$41,000 on economic survey work of forest lands, all of which constitutes a form of aid to private owners. The survey work in Minnesota has been temporarily discontinued.

CENTRAL STATES REGION

The central group of States comprises Illinois, Indiana, Iowa, Kansas, Kentucky, Nebraska, Ohio, Tennessee, and West Virginia. Annual State expenditures in aid to private forest owners in the region are given in table 7.

Fire protection.—No fire-protection activities are carried on in Iowa, Nebraska, or Kansas. The remaining six States are all in some form of protection which aids some forest-land owners, and all except Illinois are cooperating with the Federal Government.

TABLE 7.—*Annual State aid to private owners in the Central States, by projects*

Project	Distribution of regional aid	
	\$	Percent
Fire protection	\$121,520	54.5
Planting and nursery work	73,628	33.0
Forestry extension	15,883	7.1
Research	12,000	5.4
Total	223,031	100.0

The following summary, by States, shows the proportion of the forest area needing protection which is now being protected from fire:

	Percent
Illinois	20.1
Indiana	16.7
Kentucky	14.7
Ohio	47.3
Tennessee	67.9
West Virginia	67.0

Ohio ranks high in this group in its achievements in well-organized fire protection and other forestry work. In this State all protection funds are provided from public sources. Part of the effort is devoted to the protection of State forested areas. In Indiana, forest-land owners do not, in general, contribute funds for fire protection, but in a few counties and townships owners voluntarily contribute comparatively small amounts for local fire-suppression purposes. Indiana centers protection on the State forests and extends aid to private holdings located in the same region of the State forest areas. In Kentucky a compulsory patrol law is on the statute books, but it is practically inoperative. Virtually all protected areas in the State are those in private ownership. In Tennessee private owners contribute some \$3,816 a year, which is a negligible amount, the State furnishing fire-protection aid amounting to more than \$25,000. Most of the Tennessee forest areas protected are privately owned, a minor acreage of State forest areas being included. West Virginia has a compulsory patrol law, but it is not actively enforced. There are two

organized fire associations of private owners who contribute approximately \$15,000 a year, and assessments amounting to about \$4,000 a year are collected and turned into the State forestry department for fire-protection work. Active efforts to enforce the West Virginia compulsory patrol law on a State-wide basis are not deemed advisable. Most private owners now cooperating in the two associations were voluntarily doing so before enactment of the law, and the law itself has not greatly increased the extent of fire-protected areas. The counties aid materially in paying for fire suppression.

Planting.—During the calendar year 1931 all the Central States except Illinois cooperated with the Federal Government in forest planting and nursery work and spent \$73,628 of State money. Ohio, the leader in this project, individually spent \$36,999 in raising and distributing 3½ million trees, about two thirds of which were planted on private lands and one third on State lands. Tennessee gives private owners State reforestation aid by advice and help in preparing badly eroded land for planting and by furnishing planting stock, chiefly black locust, at nominal cost.

During the period 1926–31 these eight States have distributed over 23 million trees to private forest owners, approximately three fourths going to farmers and one fourth to others. State expenditures for planting activities constitute 33 per cent of the total for all forestry activities in the group.

Extension.—With the exception of Kentucky and Kansas, all the Central States extend aid to private owners in forestry extension through the activities of extension foresters. For the fiscal year 1931 the States themselves spent for this work \$15,883 which was 7.1 percent of their expenditure for all State aid in forestry work.

Research.—Indiana is the only State in this group engaged in specific forest research activities. It is estimated that the Department of Conservation spends approximately \$4,000 a year of State funds for forest research and investigations. The forestry department of the Purdue Agricultural Experiment Station is also engaged in a study of the effects of grazing on farm wood-lot management, the results of which should prove of aid to private timberland owners. Approximately \$8,000 is being spent annually on this research project. In Ohio part of the time of several technical foresters is devoted to research.

SOUTHERN REGION

The southern group comprises Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Texas, and Virginia.

Annual expenditures of State funds to aid private owners in the above States are as follows:

	Amount	Percent
Fire protection	\$313,341	82.7
Planting and nursery work	25,339	6.7
Forestry extension	24,324	6.4
Forest research	15,913	4.2
	378,917	100

State aid in this large group of States constitutes but 7.1 percent of the total amount furnished for aid of private owners in all States. No State forestry organization exists in Arkansas.

Fire protection.—Some owners in all these States, except Arkansas, receive direct aid from the State in the protection of their timberlands from fire, but such aid applies only to those in organized protection areas. The percentage of forest land protected in 1931 in each State was as follows:

	Percent		Percent
Alabama-----	43. 3	North Carolina-----	39. 1
Florida-----	8. 1	Oklahoma-----	10. 7
Louisiana-----	29. 9	South Carolina-----	5. 2
Georgia-----	8. 4	Texas-----	46. 0
Mississippi-----	2. 7	Virginia-----	63. 4

Considering the group as a whole, the State aid extended to private owners in fire protection differs quite materially from that in the Lake, Middle Atlantic, and New England States, where all forest areas are being protected from fire and where practically all protection costs are borne by the public. Protection in the South has not yet been established on a State-wide basis. Furthermore, the Southern States do not make large sums available for protection but rather endeavor to secure voluntary participation of private owners in sharing the costs. For example, prevention and suppression expenditures for the calendar year 1931 were shared between the public and by private owners in the following proportions:

	Percent
States-----	33
Private owners-----	23
Federal Government-----	44
Total-----	100

The participation and contributions of private owners in fire protection is all voluntary in the South. In Virginia and North Carolina the counties as well as the State provide public aid to owners.

Planting.—All of the Southern States except Texas and Arkansas extend assistance to private owners in planting. This aid through State funds totaled \$25,339 during 1931. South Carolina spent \$6,003 which was more than was spent by any other State in the group. Annual distribution of planting stock to private owners by all States is approximately 3 million trees, of which about 75 percent are for farm planting and 25 percent for planting on other private holdings. Several large paper and lumber companies are engaged in planting projects on their holdings and operate well-managed forest nurseries. Advice furnished by State and Federal forestry representatives has been of material aid in this work.

Extension.—Eight States employ extension foresters and furnish private owners, especially owners of farm woodland, with planting and management demonstrations and advice. Oklahoma, Florida, and South Carolina do not employ extension foresters. Florida, however, performs important extension work in cooperation with the Bureau of Chemistry and Soils by having a technical employee devote part time in promoting and demonstrating improved turpentining practices. State annual expenditures amount to about \$24,324 in these States for extension activities, which constitutes 26.2 percent of the total for all State aid forestry work.

Research.—During the fiscal year 1932 approximately \$15,913 was spent in Arkansas, Georgia, and Texas for activities in forest research of indirect aid to private owners. Expenditures were approximately as follows:

Arkansas-----	\$4,000
Georgia-----	11,163
Texas-----	750
Total-----	15,913

In Arkansas a forester is employed by the State University primarily for forest investigations. Georgia is committed to a cooperative research program to ascertain the possibilities of producing newsprint and white paper stock from southern pines. A special State appropriation of \$40,000 is made available for 1932 and 1933 through the Department of Geology and Forestry in cooperation with the Chemical Foundation, Inc., of New York City. Of this sum \$11,163 was spent in the fiscal year ending June 30, 1932. The Foundation has set aside \$50,000 for this cooperative research project contingent upon State appropriations. In Texas a limited amount of research is performed on the three State forests, but no personnel is engaged for research alone. In several Southern States, State forestry employees contribute services on research projects conducted by the Federal Forest Experiment Station.

PACIFIC COAST REGION

The States in this group comprise California, Oregon, and Washington. Annual expenditures for State aid to private owners are as follows:

	Amount	Percent
Fire protection-----	\$298,097	73.9
Planting and nursery work-----	17,372	4.3
Forestry extension-----	3,271	.8
Tree disease control-----	35,750	8.9
Insect control-----	7,734	1.9
Research-----	31,500	7.8
Forest survey-----	9,500	2.4
Total-----	403,224	100

Fire protection.—State aid in the form of appropriations for fire protection in this region constitutes 9.3 percent of the total expenditure for such aid in all States. Compulsory patrol laws require private owners to provide fire protection for their forest properties. State funds spent for fire prevention, suppression, fire-law enforcement, etc., all aid private owners. Private forest owners are aided to a greater extent when public funds bear a major rather than a minor portion of the total expenditures. In the Pacific Coast States private owners share very materially in providing funds for fire protection and therefore receive a relatively lesser amount of direct financial aid than in those Lake and Eastern States where practically the entire costs of fire protection are borne by the States and Federal Government.

Planting.—These States have not been active in planting and nursery work. The Pacific coast region has been the last one of our

great forest regions to be exploited, and protection of mature stands has been the principal need rather than the reforestation of denuded areas. However, all three States are at present cooperating under section 4 of the Clarke-McNary law in the establishment of nurseries and distribution of planting stock to farmers. During the calendar year 1931 they put \$17,372 of State money into such work, but the distribution was only 267,000 trees. Oregon led with a distribution of 198,500 seedlings and transplants.

Extension.—California is the only one of this group of States employing an extension forester under cooperative provisions of the Clarke-McNary law. During the fiscal year 1931 it engaged in forest extension work to the amount of \$3,271.

Blister-rust control.—During the fiscal year 1932 all three States provided funds for cooperative white pine blister rust control work, spending a total of \$35,750, which was of benefit to private owners.

Insect control.—In 1931 the State of Washington, one county, and certain private forest interests combined to finance a \$15,000 project for the control of a hemlock looper infestation. An airplane was used to dust 5,000 acres, and the Bureau of Entomology considered the control project successful. The use of the airplane was unique as a method of forest insect control. Of the total cost of the enterprise the State contributed \$6,810, the county \$924, and the private owners \$7,266.

While these States do not, in general, make direct funds available for forest insect control, several have provided for means of control by legislative enactments. When forest insect outbreaks occur, the States are authorized to declare zones of infestation, and the owners are required to provide control measures or funds. Pine beetle control projects under the provisions of the Oregon law have been under way for several years.

Research.—State funds amounting to \$31,500 were made available during the fiscal year 1932 for research work, a total exceeded only in the Middle Atlantic and Lake regions. California is outstanding in the Pacific group in the amount of State aid extended for forest research. As reflecting both public and private interest in forest research problems, the State annually allots to the division of forestry of the State university about \$15,000 for forest research, and the State and various counties cooperate with the Federal Forest Experiment Station by contributing annually approximately \$15,500. A cooperative project in research on fire-fighting equipment was recently financed by several of the Northwestern States. Washington and Oregon each contributed \$500 last year on this study.

Legislation.—Reforestation legislation which offers aid in the stabilization of taxes on cut-over lands and second-growth timber is provided in both Oregon and Washington. While such State aid cannot be evaluated in monetary figures, its operation is of distinct advantage to private owners of young timber.

NORTH ROCKY MOUNTAIN REGION

Only the States of Idaho and Montana are included in this group and both are extending State aid to private owners. Annual expenditures for such aid are given in table 8.

Fire protection.—State funds that are made available for fire protection are used for the protection of State-owned rather than private

lands. Such State expenditures are therefore not included in this report. Many private owners in these States provide funds for the protection of their forest properties in cooperation with the Federal Government under the Clarke-McNary law, the States themselves not sharing in this phase of the work.

TABLE 8.—*Annual State aid to private owners in North Rocky Mountain region, by projects*

Project	Distribution of regional aid	
	Amount	Percent
Planting and nursery work	\$6,349	29.7
Forestry extension	2,004	9.4
Forest research	13,000	60.9
Total	21,353	100.0

Planting.—Both States cooperate with the Federal Government in planting, and during the calendar year 1931 they spent \$6,349 of State money under this head as an aid to farmers. Montana is doing the larger share. In 1931 the two States distributed a total of 467,600 trees, of which all but 32,500 went to farmers. Planting projects and nursery production have been increasing there during recent years.

Research.—The State of Idaho regularly allots State funds to the University of Idaho Forest School for forest research. The amount of \$12,000 represents the portion falling within the scope of this report. Research in forest products, pathology, and slash disposal has been conducted which is for the benefit of private owners. Montana forest research activities are estimated at \$1,000 annually. The studies there are conducted by technical forestry employees of the State.

Legislation.—Idaho owns some 452,000 acres of State forest, and sales of timber, grazing leases, cottage and camp sites, etc., brought in \$135,499 last year. State forest sales funds are held in a trust fund for educational work within the State. Idaho has a reforestation law similar in principle to those of Oregon and Washington which may be considered a form of State aid to private owners. In Idaho the application of the reforestation law is left to the option of the private owner and only a relatively small amount of interest has thus far been manifested in the listing of lands. Only 53,371 acres of private land has been listed.

SOUTH ROCKY MOUNTAIN REGION

The South Rocky Mountain Region includes the States of Arizona, Colorado, Nevada, New Mexico, South Dakota, Utah, and Wyoming. All except Arizona and South Dakota provide some form of State aid in forestry to private owners. Annual expenditures for such aid are given in table 9.

Fire protection.—State aid in fire protection is extended only in New Mexico and Nevada. State funds for fire protection are made available in South Dakota but are used primarily for the protection of the Custer State Park. In Utah and Arizona the acreage of privately owned lands is small, and, since such areas largely lie adjacent to or within the national forests, protection from fire is provided by the Federal Government.

During the fiscal year 1932 New Mexico spent \$2,762 of State money for fire protection, and private owners contributed \$3,633. In Nevada, State aid in protection is practically negligible, amounting to but \$105 in 1932, while private owners spent \$5,695.

Planting.—The States of Colorado, Utah, and Wyoming are cooperating with the Federal Government in planting projects. During the calendar year 1931 they put a total of \$5,467 into the work. A total of approximately 258,583 trees were distributed, most of which went for farm planting. Colorado led, with 126,000 trees distributed. Colorado has a law exempting forest plantations from taxes during the first 10 years, but it has not proved a sufficiently valuable inducement to advance private planting appreciably. South Dakota has a similar law providing tax exemption for the first 5 years, but it also has proved ineffective.

Extension.—Utah and Wyoming cooperate in extension work. State funds thus spent amounted to \$2,800 during the fiscal year 1931. Farmers also receive aid and information in planting from the horticultural department of the University of Wyoming.

TABLE 9.—*Annual State aid to private owners in South Rocky Mountain region, by projects*

Project	Distribution of regional aid	
	Amount	Percent
Fire protection	\$2,867	25.8
Planting and nursery work	5,467	49.1
Forestry extension	2,800	25.1
Total	11,134	100.0

CONCLUSION

In reviewing the aid which the States are now extending to private forest owners, it is pertinent to mention the effect which Federal aid has exercised on State aid in forestry. Local forestry leadership and legislative action is principally responsible for present local and State interest and participation. However, those most closely in touch with State and private forestry work frankly acknowledge the fact that every State cooperative forestry function has been either created or vitally strengthened by Federal aid extended under the Clarke-McNary law. It is recognized that in many States full realization of State and local responsibility for aiding in the improvement of forest practice is far from ultimate attainment. Even in those States, however, progress would have been still less advanced had Federal help not been extended. Distinct gains are to be noted under the existing plan of Federal cooperative aid, which should continue to stimulate increased State and private aid to and interest in forestry. State aid to private owners, which now accounts for annual expenditures in the neighborhood of \$5,330,000, was supplemented in the fiscal year 1932 by Federal funds amounting to \$1,762,966 for the specific projects of fire protection, planting, and forestry extension under the terms of the Clarke-McNary Act.

Great differences both in emphasis on the various projects and in the extent of State financial participation may be pointed out in

widely distant States and regions. When viewed by regions, however, a general similarity of forestry activities and likewise of interest is found. Although different States usually extend State aid for forestry according to the problems needing most urgent attention, the problem of fire control is quite generally recognized as of the first importance and as fundamentally necessary to the success of most others. The establishment of this point of view is in itself an achievement of the highest significance for the future of forestry. Fire is the most destructive agent to which our forests are subjected, and the general determination to control it finds expression in the large proportionate sums provided for fire protection by State, private, and Federal agencies.

Considering emergency activities in the form of State aid, it is pertinent to note that the States in their efforts to safeguard private timber resources have provided funds in excess of a million dollars annually for the control of destructive forest insects and diseases.

At present no standard policy exists among the States as to the extent to which they should participate in extending direct and indirect aid to private forest owners.

Most States in the New England, Middle Atlantic, and Lake regions are now extending aid to private owners to a greater extent than is found in any other region. Here private aid in fire protection is extended almost entirely by the public. In the West the common understanding is prevalent that it is proper for private forest owners to carry a material part of the load of fire protection, and legislation has been enacted to bring this about. In the South, State aid is being extended with the principal objective of building up private participation of voluntary nature.

Figure 3 shows the amount of all forms of State aid in forestry being extended annually to private owners and it likewise shows the amounts which the private owners are expending for fire protection. The graph also shows the areas of privately owned commercial forest lands. The acreage of forest lands in itself should not be interpreted as representing or constituting anything more than a rough correlation between what the States are doing to aid private owners in forestry and what they should do. For example, fire protection on a comparative acreage basis costs five times as much in some regions as in others. Likewise States where destructive forest-insect epidemics or tree-disease infestations are prevalent must include in their forestry budgets control expenditure items which would not need be part of the forestry costs in States where such epidemics or infestations were absent. However, since cost figures are not available for the amount which each State should provide for aid to private owners the acreage of privately owned lands rather than cost estimates have been used as one means of giving the reader at least some idea of the extent of the forestry job on privately owned forest lands.

The fundamental principles of extending aid to private owners by the States is apparently now well established. The extent to which present aid will be supplemented in the immediate future by needed additional support is problematical. It seems reasonably certain, however, that State interest and aid as now extended to private owners will be continued and will be expanded as Federal and local interests in forestry develop and as the States themselves become better able financially to meet their broader responsibilities in this field.